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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/568,727

02/17/2006

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EXAMINER

VINH, LAN

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/568,727	<b>Applicant(s)</b> SCHROEDER ET AL.	
	<b>Examiner</b> LAN VINH	<b>Art Unit</b> 1792	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 October 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 21,24,30,31,39,42,64,65,74,75,81,83 and 86 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21,24,30,31,39,42,64,65,74,75,81,83 and 86 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. The rejection(s) of claims 21, 24, 30, 31, 39, 42 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 8-10 of U.S. 7,485,241 have been withdrawn in view of the Terminal Disclaimer filed on 10/2/2009

However, Applicant's arguments filed 10/2/2009 with respect to the rejection(s) of claims 21, 24, 30, 31, 42 under 35 U.S.C. 102(e) as being anticipated by Nishida et al (US 6,669,748)/ the rejection(s) of claims 39, 64, 65, 74, 75, 81, 83, 86 under 35 U.S.C 103(a) as set forth in the previous office action have been fully considered but they are not persuasive.

The applicants argue that the cited reference of Nishida fails to disclose the limitation of the claimed concentration of at least one alkaline metal earth selected from the group consisting of calcium, strontium, and mixtures thereof; based on the total weight of the polishing composition because all disclosure for calcium or strontium ions is expressed as in the silica particle, not in the polishing composition, as specified in the pending claims. This argument is unpersuasive because of the following reasons:

Nishida discloses the passages, in col 2, lines 1-56, "to provide a dispersion liquid of silica particles for polishing with a low content of Na ions and also with specified range of content of ions other than Na ions", "the Na ions may move disperse", "the other ions such as Mg, Ca, Sr", which can be interpreted as ions such as calcium or strontium contained in the dispersion liquid for polishing/polishing composition

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Since Nishida's dispersion liquid of silica particles for polishing meets all requirements of the claimed chemical mechanical polishing because the dispersion liquid contains: silica particles, 300 ppm of Ca ions ( col 2, lines 55-60) which reads on about  $5 \times 10^{-3}$  to about 10 mmol/kg/400 ppm of calcium, wherein the polishing composition has a pH of about 8 to about 12 (col 4, lines 25-30), water ( col 3, lines 24-25) and Nishida also discloses that " the concentration of silica particles dispersion liquid as described above, when calculated as that of SiO<sub>2</sub> should preferably be in the range from 5 to 50 weight percent (col 3, lines 31-34), thus Nishida disclosure of " the silica particles includes ions other than Na ions..... A content of these ions ...in the range from 300 ppm to 2 weight %" (col 2, lines 57-61) reads on the claimed feature (b) of claim 21 since the term "comprising" in claim 21 does not limit that calcium or strontium ions is expressed in the polishing composition

The applicants argue that there is no suggestion to combine the references of Nishida and Tsuchiya because Tsuchiya does not teach the claimed concentration of at least one alkaline metal earth selected from the group consisting of calcium, strontium, and mixtures thereof; based on the total weight of the polishing composition. This argument is unpersuasive because Tsuchiya is relied only for the teaching of "a slurry for CMP comprises 2.5 wt % of hydrogen peroxide/oxidizing agent". Since the motivation to combine the references comes from Tsuchiya, one skilled in the art at the time the invention was made would have found it obvious to modify Nishida polishing liquid to include Tsuchiya teaching in order to produce the claimed invention as per claim 39

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The applicants argue that there is no suggestion to combine the references of Tsuchiya and Nishida because Nishida does not disclose the limitation of the claimed concentration of at least one alkaline metal earth selected from the group consisting of calcium, strontium, and mixtures thereof; based on the total weight of the polishing composition. This argument is unpersuasive since it is maintained that Nishida discloses the claimed concentration of at least one alkaline metal earth selected from the group consisting of calcium, strontium in the polishing composition/ based on the total weight of the polishing composition, as set forth above, one skilled in the art at the time the invention was made would have found it obvious to modify Tsuchiya polishing method to include Nishida teaching in order to produce the claimed invention as per claim 64

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21, 24, 30, 31, 42 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishida et al (US 6,669,748)

Nishida discloses a dispersion liquid for polishing. The liquid comprising:  
silica particles ( col 6, lines 45-46)

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300 ppm to 2 weight percent of Ca ions in the dispersion liquid ( col 2, lines 1-5; 55-60) which reads on about  $5 \times 10^{-3}$  to about 10 mmoles/kg/400 ppm of calcium based on the total weight of the polishing composition water (col 6, lines 40-41) wherein the polishing composition has a pH of about 8 to about 12 (col 4, lines 25-30), the polishing liquid further comprises hydrogen peroxide/an oxidizing agent, BTA, complexing agent and organic acid, citric acid (col 6, lines 58-67; col 7, lines 1-3)

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida et al (US 6,669,748) in view of Tsuchiya et al (US 2001/0006224)

Nishida polishing liquid has been described above. Unlike the instant claimed invention as per claim 39, Nishida fails to disclose the limitation that wherein the oxidizing agent is present in the polishing composition in an amount of about 0.5 to about 8 wt.% based on the total weight of the polishing composition

Tsuchiya discloses a slurry for CMP comprises 2.5 wt % of hydrogen peroxide/oxidizing agent (page 5, paragraph 0069)

One skilled in the art at the time the invention was made would have found it obvious to

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modify Nishida polishing liquid to include 2.5 wt % of the oxidizing agent in view of Tsuchiya since Tsuchiya discloses that the content of the oxidizing agent in the polishing slurry is preferably at 10 wt% or less for preventing dishing and adjusting a polishing rate to a proper value (page 3, paragraph 0045)

4. Claims 64, 65, 74, 75, 81, 83, 86 rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya et al (US 2001/0006224) in view of Nishida et al (US 6,669,748)

Tsuchiya discloses a method of polishing a substrate comprising the steps of: providing a substrate, the substrate comprises tantalum ( page 2, paragraph 0023) providing a chemical-mechanical polishing composition comprising: silica particles, calcium, strontium, water, wherein the polishing composition has a pH of about 9, the polishing composition also includes oxidizing agent (2.5 wt %), BTA, citric acid, organic acids/complexing agent (page 2, paragraph 0027, page 3, paragraphs 0030, 0043, 0045 and 0047, page 4, paragraph 0053, page 5, paragraph 0069) applying the chemical-mechanical polishing composition to a portion of the substrate and abrading a portion of the substrate with the polishing composition to polish the substrate (page 2, paragraph 0023; fig. 1c)

Unlike the instant claimed invention as per claim 64, Tsuchiya fails to disclose that the polishing composition comprises about  $5 \times 10^{-3}$  to about 10 mmol/kg/400 ppm of calcium based on the total weight of the polishing composition

Nishida discloses a dispersion liquid for polishing. The liquid comprising 300 ppm of Ca

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ions ( col 2, lines 55-60) which reads on about  $5 \times 10^{-3}$  to about 10

mmoles/kg/400 ppm of calcium based on the total weight of the polishing composition

One skilled in the art at the time the invention was made would have found it obvious to

modify Tsuchiya polishing composition to include 300 ppm of Ca ions as per Nishida

since Nishida discloses in col 2, lines 60-67, col 3, lines 1-3 that

When the content of ions other than Na ions is less than 300 ppm, a quantity of cations on a surface of the silica particle is too small and stability of the silica particle dispersion liquid is poor, which gives some negative effects for such use as the low workability with low cost

performance, and even if it is used as a polishing agent or a polishing material, sometimes a sufficient polishing speed can not be obtained. When the content of ions other than Na

**5. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.



***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAN VINH whose telephone number is (571)272-1471. The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Lan Vinh/  
Primary Examiner, Art Unit 1792